EPA Confirmation of PRG Agreements in Principle
July 24, 2008

The Lower Willamette Group (LWG) met with EPA on June 18 and July 2, 2008 to discuss the development of Preliminary Remediation Goals (PRGs) for the Portland Harbor site. In addition, the LWG submitted a list of chemicals for which PRGs will be developed to EPA for review.

The process outlined below is focused on the development of "early" PRGs to be used for the identification of Areas of Potential Concern (AOPCs) to be evaluated in the Remedial Action Alternatives Screening and Development Report. These PRGs will be developed concurrently with the baseline ecological and human health risk assessments. The process outlined below focuses on sediment PRGs. Water PRGs will also be presented in the Remedial Action Alternatives Screening and Development Report. However, because water PRGs are not needed for the identification of AOPCs, the development of water PRGs is not discussed below.

Agreements in principle and EPA comments on the chemical list are presented below:

1. PRG Process
    a. This document constitutes agreement on the process for developing "early" PRGs.
    b. Draft "early" PRGs will be developed by October 2008.
    c. The LWG will develop a streamlined submittal presenting PRG results. EPA will perform a streamlined review of the PRG submittal.
    d. The PRG submittal will contain a table of all calculated PRGs, notes for reasons why any PRGs could not be developed, and notes for any PRGs that are based on broad assumptions or extrapolations. A brief companion text describing the basic approach to deriving the PRGs will also be included. The streamlined approach will include sufficient information to understand how the PRGs were developed.
    e. PRGs will be developed for sediments only. Water PRGs will be presented in the alternatives development and screening report (an ARARs section will be included in this document).
2. PRG Chemical List
    a. The chemical list for early PRG development will be inclusive of most of the chemicals expected to be found to pose risk in the BLRA (as well as can be predicted at this time).
    b. The LWG has developed a list of PRG chemicals on a receptor group basis for ecological risks and a pathway basis for human health risks.
    c. In general, EPA concurs with the human health PRG list. However, EPA has the following comments on the human health PRG chemical list:
        i. It is unclear how fish consumption PRGs will be developed for arsenic and mercury.
        ii. Further discussion is required regarding the development of PRGs for carcinogenic PAHs. For example, should PRGs be developed

for individual PAHs, total carcinogenic PAHs or through application of a TEQ approach? EPA recommends the development of sediment PRGs for the carcinogenic PAHs posing the greatest risk to human health.

d. In general, EPA concurs with the ecological receptor PRG list. However, EPA has the following comments on the ecological receptor PRG list.
    i. It is unclear whether PRGs are necessary for individual PAHs. It may be more useful to develop PRGs for high molecular weight, low molecular weight and total PAHs.
    ii. PRGs should be developed for endrin based on exceedance of sediment quality guidelines and tissue residue TRVs (laboratory worm and clam) in the screening level ecological risk assessment.
    iii. PRGs should be developed for delta-HCH based on exceedance of tissue residue TRVs in sculpin in the screening level ecological risk assessment.
    iv. The chemical list for ecological receptors identifies the risk assessment methods that will be used do develop sediment PRGs (i.e., sediment based, tissue based and dietary based). The February 15, 2008 BERA Problem Formulation does not recommend evaluating risks to fish based on the dietary pathway for DDT and PCBs; PRG methods should be consistent with the methodology presented in the Problem Formulation.
    v. EPA has developed a list of chemicals and PRG methods included as attachment A.

3. PRG Methods
    a. The PRG Table will present PRGs in "increments" for each receptor/pathway including:
        i. Order of magnitude risk levels and HQ 1 for human health
        ii. One target level for each ecological receptor.
    b. A range of PRGs will be presented for human health. Representative species that bracket the risk range will be presented to limit the number of PRGs developed. PRGs will be developed for the 10-4, 10-5 and 10-6 risk levels and at the HQ =1 level. The highest and lowest intakes 17.5, 175 (142 for single species) will be utilized. Species with lowest and highest BSAFs will be selected for PRG development. For the food web model, species at the high and low sensitivity range will be selected.
    c. For fish consumption PRGs, the scale over which the PRGs will be applied should be considered. For example, smallmouth bass are being evaluated on a smaller exposure scale. As a result, sediment PRGs should be developed for smallmouth bass at the risk levels and fish consumption rates identified above. For the remaining fish species, species with lowest and highest BSAFs will be selected for PRG development; for the food web model, species at the high and low sensitivity range will be selected.
    d. The relationship between tissue and sediment be presented in tables and figures. While PRG tables are useful, PRG curves should be developed

as well. In particular, it is critical the PRG curves be developed for chemicals with a non-linear risk-PRG concentration relationship.

e. For **bioaccumulation-based PRGs** the following general approach will be used:
    i. FWM or BSAFs (depending on chemical) will be used to calculate sediment concentrations that meet target tissue levels.
    ii. Water concentration in the FWM will be set to zero and background (as defined by background group), yielding two PRGs for each receptor/pathway increment.
    iii. BSAF development will follow Burkhard (2006) guidance (taking into account EPA's pending comments on BSAF development in Round 2 Report).
f. For **benthic toxicity** PRGs the following approach will be followed:
    i. The logistic regression and floating percentile models will be used to define site specific thresholds.
    ii. Guidance Sediment Quality Values (SQVs) will be used to define thresholds.
    iii. Narrative PRGs based on toxicity benchmarks (bioassay hit criteria) applied to bioassay results.
    iv. Further discussion is required to determine how these three lines of evidence will be weighted. EPA recommends using the three lines of evidence to develop a cumulative score on a location by location basis and presenting this information on a series of maps for the purpose of identifying AOPCs.
g. For **human health direct contact** sediment PRGs, it was agreed that these would be back calculated following RAGs Part B guidance.
h. For **ecological dietary-**based PRGs the following approach will be utilized:
    i. Follow methods consistent with the above bioaccumulation-based PRGs.
    ii. Prey fractions will be set consistent with the BERA approach.
    iii. Develop PRGs based on acceptable tissue levels for benthic invertebrates.

4. Background based values for consideration with PRGs.
    a. Background values will be presented for those chemicals for which risk based concentrations are expected to approach or exceed background concentrations.
    b. EPA has commented on the background methodology. These comments should be incorporated into the background approach.
    c. Background chemicals should be based on chemicals for which PRGs are being developed not the chemicals that will be evaluated in the baseline risk assessment.
    d. Estimated background concentrations will be presented in a table for comparison purposes.
5. Methods for calculating bioaccumulation based PRGs in the FWM for summed or TEQ chemicals.

a. Further discussion on the approach for summed or TEQ chemicals is required.
b. The LWG will evaluate individual congeners to identify a short list of congeners for development of PRGs.
c. EPA recommends developing PRGs and estimating background concentrations on a congener specific basis focusing on those chemicals posting the greatest risk.
d. The LWG will move forward in a phased approach. First step is to identify the chemicals and the total contribution of risk and propose the congeners for which PRGs will be identified
e. If a large number of congeners are identified, other approaches such as Kow bracketing may be employed.
f. LWG will develop a proposal to be submitted within the next two weeks. EPA will review the proposal to determine if it acceptable for moving forward.

6. Inclusion of ARARs in sediment PRGs.
    a. Chemical specific ARARs for sediment do not currently exist thus sediment PRGs do not need to consider sediment ARARs.
7. Development of "not to exceed" or point specific values.
    a. This is a risk management step that will be used in the development of sediment management areas.
    b. The hilltopping process or other similar tools may be used to develop "not to exceed" thresholds.
    c. This approach will need to consider EPA principle threat and ODEQ hot spot requirements.